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COVER: More slender in build, narrower of wing, and more graceful and active in flight than gulls, terns tirelessly cruise the summer air currents over salt marsh, sand dune and coastal waters. Their sudden headfirst dives into the water to seize a morsel of food are a constant source of delight to many seashore bird watchers. Our artist: John W. Taylor, Edgewater, Maryland.

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EDITORIAL

Management Objectives on Public Lands

LAST month we commented on one matter that has been brought before the Public Land Law Review Commission. That was the need to reaffirm the principle (which is now challenged by some bureaucrats responsible for managing federally owned land) that ownership and jurisdiction over resident wildlife resources on *all* lands, public or private, remains vested in the several States.

There are other issues to which the Public Land Law Review Commission should address itself. One involves public land management objectives; and another has to do with access to public lands for outdoor recreation, specifically hunting.

We believe that under our cherished system of enterprise capitalism, government should do those things, and only those things, that private enterprise cannot do. Protection of watersheds from indiscriminate logging, overgrazing, and burning, in order to stabilize streams and prevent soil erosion and siltation of watercourses, is one of the things history has proved to be unwise to leave in private hands. This is one of the primary justifications for acquiring and maintaining large tracts in public ownership. Having accomplished this, however, what next? There was a time, a generation or so ago, when management of public forest land for sustained yield of forest products served both to develop the know-how and to demonstrate the value of such management. That day is long past. Today the owners of commercial forest land no longer need such demonstrations to persuade them, or show them how, to practice sustained yield management. We are not running out of forest products, and the industry is perfectly capable of meeting the demands for them, on a sustained yield basis.

But wildlife habitat, and public hunting opportunities, have intrinsic but intangible values not measurable in dollars. They are not produced in quantity in response to the profit motive which moves private enterprise. If they are needed, then providing them remains a legitimate function and responsibility of government. They are needed, and the orientation of the management of public lands should be primarily toward such values as these, rather than toward those forest products which industry is perfectly capable of producing at a profit.

The removal of a large, deformed, hollow, so-called "wolf" tree, to make room for three straight young saplings to grow into poles, may be good commercial forest management. On public land, oriented toward wildlife habitat and recreation instead of products, such a tree would be highly valued for the family of squirrels, raccoons, or wood ducks it could shelter each year.

The clear cutting of stands of mature hardwoods to facilitate forest regeneration in even-aged blocks of fast growing pine trees is good commercial forest management. But on public lands, oriented toward wildlife habitat and recreation, mature hardwoods would be valued above even-aged pines for the tons of mast they shower down on the forest floor each year as food for deer, turkeys, bear, and other valuable wildlife species.

On suitable, publicly owned wildlife habitat (excepting certain military reservations and other special purpose land holdings) the improvement of that habitat for maximum sustained yields of wild game for recreational use should be a *primary* long-range management objective, subordinate to watershed protection, perhaps, but *definitely not* secondary to the production of commercial products.

Next month we will examine a corollary principle having to do with criteria for determining which public lands should be open, and which closed, to public hunting.—J. F. Mc.

LETTERS

Reject the Proposal

THE proposal by James W. Engle, Jr., (June issue, *Virginia Wildlife*) to change the Goshen-Little North Mountain Wildlife Management Areas to an Outdoor Recreation Area, should be rejected.

The primary intended use of this land is hunting and fishing, *not general outdoor recreation*. It is not proper for the Game Commission to use its funds, which are derived from hunters and fishermen, to develop roads, picnic and campgrounds and other artifacts of civilization, for use by those who do not purchase hunting and fishing licenses. These refinements are not needed or wanted by the hunter and fisherman.

I am not against the Virginia Outdoors Plan. I realize our resource plan must be people-oriented, but, we should, we must, safeguard our Wildlife Management Areas from management inconsistent with the preservation of their wilderness qualities.

There is one legitimate reason for saving the wilderness quality of Goshen, and all Wildlife Management Areas, and that is that some people enjoy the opportunity of being attuned to the continuous miracle of creation, away from the artificialities of modern life. Even though they may be in the minority, there are people who enjoy the satisfactions of primitive living under natural conditions. Multiple use is not the indiscriminate use of each area for all purposes. It is wise use of resources, planned so that each area within a system of lands serves those purposes for which it is best suited.

Wilderness qualities are most fragile; they cannot survive a mechanical, an artificial or an exploitive management. They cannot survive where all other activities are permitted simultaneously.

Instead of creating roads and "Little Skyline Drives" for windshield spectators and trail riders to jam, we should consider restricting all motorized travel to these areas, and permit access only by foot or horseback. In Mr. Engle's own words, "It is an interesting and rewarding area to explore on foot."

Don Morris
Arlington

Expand the Proposal

CONGRATULATIONS on your excellent pitch for regional recreational planning, "The Goshen-Little North Mountain Outdoor Recreation Area—A Proposal," in the June issue of *Virginia Wildlife*. This kind of coordinated land use planning certainly is called for now as pressures mount, as a result of the increased human population, for year-round use of all publicly owned recreational lands.

Let me suggest that you consider including in your regional recreation plans provision for the preservation of a few State wilderness areas. . . . These units would not only serve wilderness recreationists but would also protect habitat for wilderness wildlife species, such as the black bear.

M. Rupert Cutler
Assistant Executive Secretary
The Wilderness Society

SEASONS IN DISMAL SWAMP

Summer

By ULRICH TROUBETZKOY
Richmond

WHEN the summer water level goes down far enough in Lake Drummond, it gives glimpses of history and pre-history in the Dismal Swamp: an Indian chipping stone and points, the stumps of cypresses destroyed in ancient fires, practice bombs dropped in the lake during World War II. . . .

Joe Barnes, who lived in the swamp for nine years as a boy, says an old cannon ball was found in Lake Drummond about 40 years ago. In a dry season, he tells us, he has seen bear dig several feet down to the water level and the deer jump into slush puddles when the mud flats dry up. He has found many Indian things, a chipping stone on Jericho Ditch, a tomahawk and arrowheads on Quonset and on West Ditch. From frequent surface finds, it is obvious that Indians hunted there, but no archaeological work has yet established that Indians lived in the swamp.

Summer is the time of birds and blueberries, of purple disks of elderberries hanging over their reflections in coffee-colored ditches. If you wait quietly near water, you will probably see a heron or a kingfisher carry off a "flyer." If you rest the paddles of your canoe on the Portsmouth Ditch, you can watch the warblers and cardinals flickering in and out of bankside thickets of holly, honeysuckle and flaming trumpet vine. Because cultivated fields are encroaching on this part of the swamp, you will hear the quail calling. Overhead a cruising hawk suggests the ecology of the swamp.

The diaries of George Washington, promoter of the swamp, show that he was in it from May 25 to 28 in 1763. He did not go back until October. Someone must have warned him about the mosquitoes and "swamp flies" or "yellow flies." Eighty-six year old Swamper Harvey Vick showed me a big bottle of rubbing alcohol he has handy when the flies hite. Mrs. M. A. Dunn, of Wallaceton, repeated the durable local saying that the flies of July will go away "with the first big rain in August."

Anyone who has reason to go into Lake Drummond in the summer, is apt to prefer traveling by water. Old Captain Crockett was for years the principal one who took boat parties in by way of the Feeder Ditch from the Dismal Swamp Canal and, along with the scenery, travelers were treated to tall tales of the swamp's wildlife and its legendary denizens. But this fund of myth and history is gone, for Captain Crockett was killed by a car as he was crossing Route 17 several years ago.

If you do not have a boat of your own, you can still arrange to make this trip, by way of the Feeder Ditch, through M. A. Dunn, of Wallaceton. (Mailing address: Route 1, Box 248, Chesapeake.) It is well to make arrangements ahead of time, since he can accommodate only five passengers at a time and the trip, which usually begins at 7:30 or 8 in the morning, takes between two and a half and four hours, depending on weather and load.

In such weather as I got on my recent trip to the swamp, with gale warnings up for Hatteras, there could be no excursion by boat into the lake. Shallow Lake Drummond can get unbelievably rough in a very short time.

Exactly 10 years ago occurred one of the most publicized water disasters in the Dismal Swamp.

Bennie Powell had never been to Lake Drummond, although he had been coaxed again and again by his friend, Dr. Roland Ellison. "I kept putting it off." Finally he was persuaded to go with Dr. Ellison and C. Thornton Early.

When interviewed several years ago, he said: "Something told me not to go. The wind was blowing bad." When they got to the ditch, Early said, "Powell's going with me on the lake," even though "the waves were running three to four feet high and were close enough to give the boat a rough buffeting."

They didn't get far before the motor "bluvvered." They tried to start it, "but it wa'nt running right." Powell felt the water coming up his leg. Then, "there she went. Everybody went over and everything went to floating. Everybody grabbed the boat."

"There ain't a man who goes into the lake can swim like I can," says Powell, who was holding onto the bow. Early was at the stern, holding onto the motor. Dr. Ellison was amidships. When the doctor was washed off, Powell put him back on the boat, saying, "Thatta boy."

At first, Powell said, "I felt like I'd freeze to death." Then he was even more concerned to realize, "I didn't see nobody coming for us." Next they were strangling and blowing water out of their noses.

Ellison said, "We've got to do the best we can." Powell had to put him on top of the boat again. In five or ten minutes, he slipped off again, held onto the cable a few moments, and then Bennie Powell had to watch him drown, for he himself was just about out of breath. He looked at Ellison going by, "The man's eyes done set." He glanced back at Early, "It wa'nt two minutes before I saw *his* hands let go. He came right by me, just like Ellison exactly, floating just under water."

Powell was two hours all by himself fighting it, washing from one end of the boat to the other. When he

In early summer the best way to enter the swamp is by boat, through the Feeder Ditch to Lake Drummond.

Commission photo by Harrison

Formerly *Virginia Wildlife* editorial assistant, then editor of *Virginia Cavalcade* (published by the State Library), Mrs. Troubetzkoy is a feature writer and columnist with Richmond Newspapers, Inc. This June she was elected president of the National Federation of Press Women, Inc., at the Federation's Annual Convention in Sun Valley, Idaho.

Va. Chamber of Commerce photo

When the water is low in Lake Drummond, one can see ancient cypress stumps exposed. The lake is a unique geographic feature of the region.

floated opposite the Rogers Hunt Club, he saw a man with a pole. He heard the man shout, "See if you can't hit bottom." It was Dewey Howell who came to rescue him. Powell was in water to his chest, but the waves kept breaking over his head. Howell revived him. Aspirin, liquor and clothes warmed him. Then he dozed and gasped on a cot in the club. Finally, Howell said, "Captain Bennie, you're going to the hospital." "Before I got to Magnolia, I could hear the sirens following."

"I couldn't get off my mind what I'd been through," he said to me, remembering vividly in spite of the years between. "The waves just whipped 'em to death. They were found not far from where they went in, floating just under the surface. The Alumacraft boat stayed afloat." Only Bennie Powell, with a bricklayer's strength in his hands, had the power to hold on. Apparently one cause of the tragedy was an air hole crack in the line which caused the motor to "cut out, run, then die again." The other was the treachery of the usually placid, shallow waters of the lake.

Fire in the Dismal Swamp, because of the deep deposits of still-forming peat, is nearly always disastrous and difficult to fight.

Thirteen hundred scorched acres, thousands of burned wild creatures, millions of dollars worth of charred timber, scar the swamp after the most recent major fire this spring. The smoky fire moved underground in the peat moss and leaped among the treetops in the high winds, until it burned to water level or to sand, leaving great holes.

The Indians—and many since then—have believed that Lake Drummond was formed by such a fire burning for "many moons" in the peat deposits. Geologists, however, class it with the type of peat-enclosed lakes common in morasses of glaciated areas. Cypresses, black gums and other trees which can maintain their roots below the level of permanent water, crowded in on the basin.

A fire in the swamp is such a serious matter and so difficult to control that, on first notice of the last fire, R. J. Bartholomew, Fire Control Chief for Virginia, came from Charlottesville. At the height of the fire, according to A. D. Leach of the Chesapeake *Post*, there were 150 men fighting it around the clock. After the above-ground part of the fire was brought under control, 50 men continued patrolling the area and pumping on the smouldering peat.

Recalling the 4400-acre fire in 1952, Bartholomew said that at that time he saw a flaming rabbit leap a fire lane and start a new conflagration in another part of the woods.

Over the years, fire in the swamp has been caused by sparks from locomotives of the logging railroads and from sawmills, by lightning and by fires that apparently had gone out, but had really gone underground. Anyone who gets special permission, as this writer did a few years ago, to go into the swamp during a period of great fire danger, is pledged not to smoke or use any form of fire and to report anyone else seen in the swamp.

Indian hunter Earl Bass said a few years ago he didn't believe the fires directly hurt the fleeter game in large numbers, but it was the cause of more being killed because "Little green stuff came up and they came to eat it." Only a few weeks after this last fire, "little green stuff," notably the croziers of new ferns, was coming up. The trees too have put out leaves, but foresters say this was because of sap already flowing and that most of the burned trees will die.

Joe Barnes recalls particularly the big fire in the summer of 1923 when so much wildlife was burnt and says he saw "deer walking on nubs." "We moved out in a boat. You couldn't see 20 yards. We went out to Wallaceton and lived there two or three weeks. The fires burned through into North Carolina, to the Northwestern Railroad." He says that was when ashes and lye drained into Lake Drummond and into the ditches and killed so many fish and that deer, destroyed in certain sections, apparently did not return.

One of the biggest fires was in 1925 and after it the Richmond Cedar Works changed to the use of oil in the juniper swamps. That fire burned about 15,000 acres, most of which had been cut over and was coming back in juniper (white cedar). There were other major fires in 1926 and in 1930.

Once in the Dismal Swamp, one can savor the delights of isolation and the excitement of having to be alert to whatever dangers lurk within, from snakes to storm to fire to the possibility of getting lost. But, on the way into the swamp these days, one may be shocked into realization of far greater danger, to the survival of our last eastern wilderness.

Overpopulation of urban areas nearby and the fallout of an explosive economy threaten the Dismal Swamp in more permanent ways than even its most disastrous fires. Fiddleheads spring back from scorched swamp. Trees replenish themselves, however slowly. Wildlife reproduces.

(Continued on page 22)

A "light" in the swamp occurs after logging and a forest fire, before the trees have grown back.

Va. State Library photo by W. A. Christian, Jr.

A gray squirrel with tiny radio transmitter attached. By this device squirrels were tracked, and their home range and denning habits "observed."

A NOTE ON DENNING HABITS OF THE GRAY SQUIRREL

By JOHN H. DOEBEL
Department of Forestry and Wildlife, V.P.I.

THE successful hunter is probably better acquainted with the denning habits of the gray squirrel (*Sciurus carolinensis*) than he realizes. Certainly, a knowledge of denning aids the hunter in choosing "prime" areas in which to pursue this popular sport.

A V.P.I. radiotracking study (*Virginia Wildlife*, March, 1967) has taken a closer look at the home range and activity of this important small game species. While collecting this data, attention was also given to den tree preferences and the number of dens used per squirrel.

The study area is an eight acre, mature to overmature oak-hickory woodlot located on the V.P.I. College Farms. This woodlot supports 10 to 65 gray squirrels. Approximately ten cattle graze the area leaving little understory vegetation. The dominant tree species are white oak (*Quercus alba*), red oak (*Quercus rubra*), and red hickory (*Carya ovalis*). Interspersed with these species are a few smaller black cherries (*prunus serotina*), domestic cherries (*Prunus cerasus*), and mockernut hickories (*Carya tomentosa*).

Ten gray squirrels were tracked a total of 87 days and 24 nights from November, 1966, to March, 1967. A den tree was defined as any tree in which a squirrel spent a night. The species and size of each tree was recorded.

The monitored squirrels used a total of 17 dens in 15 different trees. Ten dens were located in white oaks, thus showing a preference for this species. This is expected since the white oaks on the study area are older than the other dominant species; they also decay more rapidly than hickories. Two dens were located in both black cherry and red oak trees, and one den each was located in a red hickory and a domestic cherry. The rapid-decaying properties of cherries are probably responsible for three dens being located in these species, even though they compose only a small percentage of the total trees on the area.

The mean d.b.h. (diameter breast height) of the den trees was 35 inches. Because of the large size of the trees (up to 50 inches d.b.h.), most den holes are relatively large; therefore, the transmitter on the squirrel's back offered little resistance to den entrance. One squirrel enlarged its den hole by gnawing after finding difficulty in entering.

A radiotracking period usually lasted six days for each squirrel. Six squirrels used one den each during their respective tracking periods; the remaining four squirrels used more than one den. One adult male used four dens, one of which was located in another woodlot about one-quarter mile from the study area. Another squirrel used three dens, and two squirrels used two different den sites. There was no relationship between sex, age, and the number of dens utilized by an individual squirrel.

Den sites were generally located on the boundary of the squirrel's home range. Such positioning of the den or nest with respect to the home range area has been noted for other small mammals (Kaye, 1961). No explanation of this relationship has been advanced.

Hickories and red oaks produced the greatest amount of available mast during the study period, but three dens were found in these species. Thus, the combination of the three dominant tree species on the area provided the squirrel population with needed den sites and mast.

The study conditions were abnormal for Virginia with respect to habitat and population levels. The combination of ample den trees (white oaks) with good mast producing trees (hickories and red oaks) has produced an unusually high squirrel population. Of course, mast production varies from species to species and year to year; however, our study stresses the importance of supplying *both* food and cover for this important small game species. These are probably best supplied through forest management practices which encourage mixed stands of forested areas.

Proper gray squirrel management is difficult to achieve as many times it is in direct conflict with the most "economically efficient" means of forest production and harvesting procedures. I hope that, with further research, we can fulfill both the needs of the forester and the hunter, thereby perpetuating an invaluable resource.

This is the type of den in old hardwood trees for which squirrels on the study area showed preference.

COMMISSION-OWNED LAKES:

Lake Conner

By HARRY GILLAM
Information Officer

LYING between Buggs Island Lake and the Leesville Smith Mountain complex, Lake Conner is largely overlooked by the present generation of anglers who flock to the larger lakes. In the opinion of some fisheries biologists, the 111 acre lake offers bass fishing on a par with any in the area, since a population of gizzard shad provides topnotch forage for the hungry bass.

Lake Conner is located in northern Halifax County some eight miles north of Clover. It lies in a setting of rolling hills surrounded by mature hardwood forest with a few scattered pines. The lake was completed in 1954 and is relatively shallow with a maximum depth of 11 feet. Cattails are prevalent around the shoreline, especially in the lake's upper end. Largemouth bass, bluegills, catfish, carp and crappie make up the lake's fish population. Bass fishing is good in April, excellent during May, June and July, and continues good into September. Bluegill fishing is tops in April and May and continues good into early fall. Crappie fishing is best in spring and fall. A 4 pound 13½ ounce crappie was caught in April, 1967. The lake has a rather large carp population and angling for them has become a popular sport with local residents.

Fishing pressure is rather light with from one to two dozen anglers present on a normal Saturday during the best fishing periods. Although an unused concession stand is present, there are no boats for rent and no source of bait, tackles or food at the lake. Bait and tackle can be secured at Brookneal or Halifax. A launching ramp is provided for launching personal boats and there is a parking lot.

The light fishing pressure on Lake Conner gives anglers plenty of elbow room. Although no boats are available at the lake, a ramp is provided for launching private boats.

Lake Conner is a shallow lake located in the rolling hills of northern Halifax County. It supports an excellent population of largemouth bass plus crappie, catfish, sunfish and even carp.

CAMOUFLAGE:

a gentle defense

By KATHERINE W. MOSELEY
Rixeyville

THE fawn of the white-tailed deer lay curled in sleep on the forest floor. A dappled pattern of sunshine and shadow filtered through the leaves of the trees onto the soft, rusty, splotched-with-white coat of the fawn. As long as the young animal lay motionless it was invisible. The tones and patterns of the curled body seemed to melt into its surroundings.

The covey of quail pecked their way through the open autumn field secure in their drab concealment colors. Suddenly alarmed, the birds rose like whirring feathered bombs and headed for a wooded cover. There they dropped all at once and disappeared. Each bird, with wings pressed tightly against the body, completely faded from sight. There were dead stumps, dry grass and weathered leaves in the wooded cover.

In the world of fang and claw every living creature must have defensive powers and for many their greatest weapon is the gentle defense of protective color. However, not all protective coloring is concealing. Some color patterns still leave the creature visible but disguised to be something else that cannot be harmed. Usually those who depend on protective coloring are shy and elusive. Thanks to this gift of nature they may slip or hide among their enemies like noiseless shadows.

Authorities on animal and insect camouflage are convinced that the color variations are due to the elimination by predators of the ones of their species which did not match their backgrounds as effectively as the others. For instance, the small animals of the desert will be lighter and sandier than the same small animals in a shadier background. The non-matchers in each neighborhood were sighted and killed. In the northern part of the continent the Arctic polar bear, the Arctic fox, the Arctic wolf wear snow-white coats the whole snowy year around. A little farther south all three have color variations that are seasonal, white coats in winter, darker ones in summer.

S.C.S. photo by B. D. Robinson

Ground nesting birds, like this quail, almost completely disappear from sight when they "sit tight" in their concealing cover.

As a rule most small animals are of inconspicuous appearance and harmonize well with their surroundings. If lying close to the ground and not in motion they are difficult to distinguish. The camouflage of color is useless, however, unless the creature knows how to use it. The gray squirrel blends into the burly trunk of a tree by humping or flattening its body. If frightened it sidles and glides, using the tree as a shield, then it seems to freeze and its body becomes as one with the textured bark.

The stone-still summer toad seems to be only a dry clod of earth. The spring peeper perched on a river reed is an inch long knot. The bull frog is a part of the green scum of the pond. Tiny tree frogs that rest on leaves of low shrubs so match the color of the leaves they can scarcely be discovered.

Most nocturnal animals, birds, and insects are bravest at

With the sun's rays filtered through summer vegetation, making a pattern of light and shadow, the fawn's coat provides almost perfect camouflage.

Commission photo by Kestoloo

night when they wander and feed. Their survival depends on daytime camouflage while they rest. This means many long hours without stirring. The screech owl sleeps and perches motionless most of the sun-lit day huddled in a tree with dense foliage. It depends on protective coloration for safety. If frightened the little owl stretches itself tall and thin, tightly holding in all of its feathers in order to melt even more into its surroundings.

Many female birds are quite drab as are their nests and eggs. Only birds that nest in deep holes or burrows lay pure white eggs. Other birds which nest upon the open ground such as the whippoorwills produce the best camouflaged eggs. However, all open nests hold eggs that are speckled, freckled, spotted or blotched in order to be less conspicuous. The birdlings of the ground nesters such as quail, turkey and grouse are ready to leave the nest as soon as the down dries. Their dull, earthy colors enable the young birds to hide safely if the mother gives the cluck of danger.

It is in the world of insects that the art of camouflage seems incredible. Some of the disguises seem utterly fantastic. Insects are the most abundant life of our world but may remain unseen because of their amazing coloration or lack of it. They may resemble anything from leaves, twigs, flowers, to debris and animal droppings.

Beetles and bugs seem natural fragments of leafy earth. Grasshoppers are lost from sight in either fresh, green grass or dried parched weeds. There is a grasshopper with ragged wings which appear to be chewed away by insects. The katydid is green with thin, leaf-like wing covers, which makes the insect indistinguishable from the young tree leaves where it lives. Mantises are colored greenish-brown with almost transparent wings. When at rest they are impossible to see in foliage. The walkingsticks are large wingless insects that resemble long twigs, even to small evenly spaced nodes. They live and feed on oak, locust and walnut in their almost invisible dress. The twig caterpillar has also developed the physical dimension and markings of a real twig. It must find a tree in which to branch off a limb as a twig. If touched, the insect drops to the ground motionless as though it were a real dead twig.

Even the gaudiest of moths have splotches, bands and gradations of color and so they move and rest in some degree of safety. A species of moth with banded wings rests on banded leaves, always placing itself so the bands are parallel. There are over one hundred species of the attractive underwing moths in the United States. When the adult rests on the tree bark with the brownish-green wings folded it can scarcely be seen. In flight there are bright colors of the underwings but to the enemies on watch the moth is so drab as to be invisible. Some caterpillars must hang from the underside of a twig. The light from above makes it almost imperceptible but if it gets turned over it can be seen quite plainly, so some instinct prompts the caterpillar to immediately turn to hang upside down again.

Many reptiles have achieved an almost complete harmony with their environment. The chameleon, the champion of all camouflage artists, is able to change his coloration to conform or to blend with most backgrounds. Chameleons may turn from gray to brown to green. The copperhead snake is difficult to visualize unless it moves. The hour-glass patterned back appears to be a segment of leaves or seems a part of a stone if the light shadows are mottled over the stone. The grass snake slips unnoticed through summer weeds. The garter snake of the stony hillside hugs the ground and moves so quickly and silently through the brown leaves of which it seems a part.

Defense by color seems too simple and passive to be successful. Yet the whippoorwill's yellowish-brown eggs placed uncovered on old dead leaves or rotted bit of wood defy reason as to why they should be where they are undetected and usually unmolested even though enemies abound. The eggs hatch and in time there are whippoorwills to call their plaintive cry. These adults then raise another brood in the very same manner and somehow we know that as long as the earth turns there will always be heard the wailing song of the whippoorwill. Camouflage, the gentle defense, is truly a triumph of nature.

Compare the coloring of this female mallard with her gaudy spouse who will have nothing to do with the nesting chore. She has to rely on her "gentle defense" for four weeks to bring off a brood.

Nat. Park Service photo

Photo by Hugo H. Schroder

THE QUANTICO CONSERVATION STORY

By W. H. TAYLOR
Game Biologist

ALTHOUGH Quantico Marine Corps Schools is a very busy training base year round, it has proven to be an outstanding hunting and fishing area. It has a wider variety of game and fish available to the sportsman then any other military base in Virginia. In fact, no public hunting area in Virginia can boast a wider variety. With the exception of black bear, every species of native game bird and animals may be hunted there. Both forest and farm game species, including deer, turkey, quail, rabbits, squirrels and ruffed grouse, abound in the woods and fields of this Marine training base. Migratory game include a fair number of mourning doves, a wide variety of ducks, and from time to time a few geese. Furbearing animals include raccoon, fox, muskrat, beaver and groundhog.

Fishing the streams, impoundments and tidal marshes may produce a catch of most warm-water fishes found in tidal and piedmont waters of Virginia. Unique to Virginia military bases is the trout fishing on Chopawamsic Creek.

The game and fish resources furnish about 15,000 man days of recreation per year. Of this about 9,000 are hunting days.

Quantico Marine Base was established in 1917 and four years later Major General John A. Lejeune, 13th Commandant, USMC, founded the Marine Corps Schools. Included were a Company Officers' School for captains and a Field Officers' School for majors. Today the Basic School trains newly commissioned Marine second lieutenants and readies them for combat, while advanced professional schooling is provided for more experienced officers through the grade of lieutenant colonel at Quantico's Amphibious Warfare School and the Staff and Command College. In addition several specialized technical schools for enlisted men and officers were added as required. Facilities for research, development, test and evaluation for the Marine Corps are also located here.

From the initial acquisition of 5,299 acres obtained by proclamation in 1918 the base grew to about 62,000 acres in 1941. Approximately 54,000 acres known as the Guadalcanal area are available for hunting. Approximately 700 to 800 acres of water in streams and impoundments are utilized for fishing and duck hunting and include about six and one-half miles of streams. There are about 7,000-7,500 acres of cleared land, most of which has been cleared for training purposes.

Marine Corps Schools is located about 35 miles south of Washington, D. C., in Prince William, Stafford, and Fauquier counties, and consists of mostly rolling wooded land interspersed with grown-up fields which made up over 100 farm and home sites. Much of what was open farm land in 1941 has since become solid stands of Virginia pine or mixed hardwoods of pole and pulpwood size. It borders on the Potomac River, which is at sea level and extends inland to heights of 475 feet.

It is hard to say when the first game and fish management efforts were begun. The Commandant, Marine Corps Schools, in 1949 established a Fish and Wildlife Conservation Committee under the staff cognizance of the Assistant Chief of Staff, G-4. This committee was established "to formulate plans and recommendations for an active wildlife conservation and management program at the Marine Corps Schools." From its beginning the command policy was to restore, improve and preserve the natural resources of the lands and waters. The aim has always been sound principles and policies consistent with good conservation practices.

With the maturing of stands of timber a forester was hired in 1962 to set up a sound timber management program. Timber management was coordinated with wildlife management through the Fish and Wildlife Conservation Committee.

Early efforts at game management were limited to developing and planting small game food patches scattered throughout the base. Numerous bicolor plantings long forgotten in grown-up fields bear evidence of these early management efforts.

(Text continued on page 20)

Below: Major B. W. Windsor inspects a renovated bicolor strip. Right: As a result of sound wildlife management Quantico boasts a fine wild turkey population, and hunters harvest an annual crop of prime gobblers.

Commission photo by W. H. Taylor

Photo by Major B. W. Windsor

Commission photo by W. H. Taylor

Photo by Major B. W. Windsor

Above: A power line right of way through the reservation, one year after seeding to wildlife food plants. Above, right: A managed beaver pond, with pipe in place over dam to control water level. Below: A dove field planting of brown top millet. Below, right: Tall corn grows at Quantico. Some old fields are planted to agricultural crops as part of the game management program.

Commission photo by Taylor

Photo by Major Windsor

HUNTER DAYS AND GAME KILL, 1957-1967, MARINE CORPS SCHOOLS, QUANTICO, VIRGINIA

Year	*1957-58*	*58-59*	*59-60*	*60-61*	*61-62*	*62-63*	*63-64*	*64-65*	*65-66*	*66-67*
Hunter days	3104	4215	4995	6490	7169	7169	9534	8248	8991	7558
Game Kill:										
Deer	121	178	342	479	572	564	721	581	465	190
Turkey	24	3	47	88	42	71	32	41	25	70
Quail	634	462	994		348	367	111	502	576	670
Grouse						5	5	81	53	97
Rabbit	437	349	732		147	112	87	670	807	1023
Squirrel	268	319	680		88	124	119	551	1011	748
Dove						232	120	292	421	501
Ducks						13	18	95	174	267

(Continued on page 20)

Man's Best Friend

By MALCOLM BOOKER
Game Warden, Buckingham

V.S.C.C. photo

WE have always heard the expression that the dog is man's best friend. This may have been true, but the old notion is fast losing some of its validity.

The dog is friendly most of the time, if you treat him kindly. He'll greet you with a wagging tail, and since the first dog came off the ark and made for the nearest fire plug he has had more liberty and freedom than any other domestic animal, with the possible exception of the house cat. Helping to enforce the dog laws of Virginia for a number of years, I have encountered several growing problems, of which most people may be unaware, that stem directly from this freedom and liberty which we bestow on our canine friends. With the human population explosion and the building of new homes in sight of one another, the dog has been caught in the cross fire of modern living.

Here is a sample of the many complaints I get. "My good friend and neighbor, John Doe, has dogs that come to my place every day. I have a problem feeding my own dogs and stock because his dogs eat up my feed, and they are ruining my shrubbery. I wish you would tell John Doe to keep his hounds at home, *but do it in such a way he will not know it was I who complained*, as we go to church together."

This I'll attempt to do most of the time, and I get the following answer from John Doe: "I know who made this complaint. You may not tell me, but I know; and I am surprised at him because he has a dog that he thinks never leaves his premises, but he is wrong as I caught him digging up moles in my best row of English peas last week."

We might as well face the fact that man's best friend is fast losing his freedom to roam at will. The time has come to revise our thinking with respect to responsibility for control of dogs, if we are to cope with modern-day problems.

A man's dog is his personal property, and should be treated as such and not allowed to roam at will. There are dogs that forage regularly for food. One man told me recently that one of his neighbor's hounds turned his garbage can over every morning at exactly seven o'clock. We believe that about 25% of all dogs get much of their food this way.

Buckingham is one of the counties in Virginia that has had a five-month confinement period for dogs. During this time the dog is supposed to be confined to the owner's premises. This ordinance was passed for conservation purposes. We know that the roaming, self-hunting dog destroys and breaks up the nests and dens of many game birds and animals. We believe that this ordinance has helped Buckingham County maintain all around good hunting for upland game. Some day soon we may have year-around compulsory dog confinement, with the exception of the hunting season. Some states already have such laws, and they have brought about better relationships between neighbors and greatly helped in wildlife conservation.

The hunting season brings its own special kinds of dog problems, and one of the most serious is the number of trespass cases in which dogs are involved. Deer hounds, and deer hunters, cause much of the trouble. Neither a deer nor the hound following him recognize land boundaries, and the eager hunter is tempted to follow the chase to get a shot at the quarry. Caught upon land where he has no permission to hunt, he explains to the game warden or landowner that he is only "trying to retrieve his dog." But whatever his intention, if he has a firearm he is a trespasser. Most trespass cases occur on posted land, but the armed deer hunter cannot legally follow his hounds even on unposted land unless he has the landowner's permission.

Hunters in eastern Virginia may be forced eventually to develop more interest and skill in the art of hunting deer without dogs. I have discussed the merits of hunting deer with and without dogs many times, with hunters from Michigan, Pennsylvania and even Virginians from west of the Blue Ridge, and they all agree that there is all the difference in the world in the taste of the meat of a deer that has not been run half to death by dogs and that of one which has been so chased. The meat of the former is recognized almost universally as being superior. As for the sportsman who says he doesn't care about the game but just likes to hear the dogs run, perhaps he had better get himself a good recording of a chase and sit down and enjoy himself. If there is one thing that is certain, it is that the days when an armed hunter could put his dogs down and follow them wherever the chase might lead are already gone forever, and the sooner hunters themselves realize it the better.

We believe that at least two hundred dogs are left behind in my county at the end of each hunting season, to roam in search of food and a new home. This is the time of year that I get most calls concerning stray dogs. Often an owner's name is on the collar of a "lost" dog, but when someone tries to notify the owner he either receives no answer or else the supposed owner denies that the dog is his. The name on the collar does not prove ownership, of course, as collars can be changed from one dog to another, or taken off a dead one, by persons unknown. What could be happening is this. Hunters acquire new dogs during the year from different sources, and if during the hunting season a dog does not meet a hunter's expectations the hunter may just walk out of the woods and abandon the dog on purpose. It is sad but true that some hunters feel that a dog has got to be mighty good to be worth feeding and taking care of from one hunting season to the next. Thus we go through a vicious circle each year. Just about the time we think we have the roaming dog problem halfway cleaned up, another hunting season comes and more dogs are left behind.

It is time all dog owners realize that their dogs should be managed and looked upon as other personal property. The dog is not to blame for his actions. His owner is. Dog owners who fail to keep their dogs under control at home are hastening the day when more legal restrictions must be applied to Old Rover's traditional freedom. Hunters who do not keep their dogs under reasonable control in the field, and who abandon unwanted dogs to shift for themselves, are hastening the day when such activities as chasing deer with dogs will have to be dispensed with entirely.

VIRGINIA WILDLIFE

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

$5,000 APPROVED FOR WEED CONTROL IN CHICKAHOMINY. The Commission of Game and Inland Fisheries approved $5,000 for experimental weed control in Chickahominy Lake above Walkers Dam. These funds should be adequate to clear up major trouble spots and greatly improve conditions for anglers. One of the main purposes of the project will be to learn how effective such treatment is in a large lake like Chickahominy and how long the benefits will last.

The watershed feeding this lake has supplied too much nutrient material over the years, causing the waters and bottom of the lake to become over-enriched. This condition has favored the growth and spread of the introduced water weed, Elodea, that is commonly grown in aquariums and gold fish bowls. Lush growths of this weed in many parts of the lake entangle fishermen's lures, foul outboard propellers, and in some cases literally prevent boat travel.

The chemical Diquat, a product of the Ortho Company, will be used in an attempt to control these submerged weeds. This chemical is certified as safe for use in water supply reservoirs such as Chickahominy. It will be pumped and sprayed into the water in troublesome sections.

Studies have indicated that it would take $24,800 to attempt to eradicate the underwater weeds completely in the lake, with no guarantee that the effects would last for more than one year. The Commission's treatment will admittedly be partial, but anglers should see a marked improvement in the weed situation.

COMMISSION REPLACES CLINCH RIVER SPORT FISH LOSSES. The Commission of Game and Inland Fisheries is acting swiftly to restock the Clinch River with game and pan fish below the power plant at Carbo in Russell County in the wake of a recent massive fish kill. Fisheries Research Biologist Bob Wollitz estimated that 162,620 fish were destroyed as the pollution swept downstream.

Fixing responsibility for the mishap and determining whether negligence may have been involved is a function of the State Water Control Board, while the Commission of Game and Inland Fisheries is undertaking to replace fish populations that were destroyed and to determine their replacement value. Apparently, fish life was almost totally destroyed in a stretch of the river as a result of failure of a dam which allowed water from a settling pond containing a high concentration of poisonous coal ash to spill into the river.

The extent of the damage has been determined and the Commission plans to begin restocking the Clinch with appropriate species of fish as soon as the pollution clears enough to make this practicable. The Commission expects the sport fishery on this river to be hurt for some time, because while a lot of the lost fish can be replaced, only nature and time can restore the abundant fish food organisms which may have been virtually wiped out along with the fish in some places. However, everything that can be done will be done to restore sport fishing in the affected portion of the river to its former status just as quickly as possible.

DOVE NUMBERS DOWN IN EAST. Call count surveys completed in May and June show mourning dove numbers down about 2% overall in the Eastern Management Unit, according to the U. S. Fish and Wildlife Service. The Virginia count dropped 18% below that of last year indicating fewer breeding birds. Last year the Virginia count was up 21% so this puts the state on a par with the 1965 breeding population.

Virginia Commission of Game and Inland Fisheries personnel participate in this breeding dove census each year and the results are used in determining fall hunting seasons and bag limits. The 1967-68 dove season framework options were about identical with those offered eastern states last year.

INLAND SAILING

By BILL COCHRAN
Roanoke

LIKE meadow mushrooms after a rain shower, sailboats have suddenly—almost mysteriously—blossomed out in increasing numbers on Virginia's inland lakes.

Within the past few years, they have rapidly become part of the outdoor scene. They've slipped in quietly, somewhat as a cat walking across a rug, and suddenly they were there; first one or two, then a dozen, then several dozen on impoundments like Kerr Reservoir, Smith Mountain Reservoir, South Holston Reservoir, Carvins Cove, Hungry Mother Lake, Claytor Lake, Douthat Lake—anywhere there is enough water to float one.

The power boat enthusiast eyes them inquisitively as they are chased by the wind over ripply water. He wonders. He shrugs. And then he roars off up the lake.

Why sailboats all of a sudden? Because sailing is a challenge, offering an outdoorsman the chance to taste a slice of transportation freedom in an era of buzzing motors and cluttered concrete. Motorboating, says the sailing fan, is too much like driving a car. It isn't as challenging. It isn't as exciting. It isn't as demanding of skill. The sailboater lives in a world in which wind and wave assume extra importance, a quiet, blue world of water and sky, a world in which the emphasis is on an entanglement with nature.

The sudden interest in inland Virginia sailing doubtlessly is a part of the great escape to the outdoors. It is one of the many activities that help modern man satisfy an elemental need to refresh himself by an occasional return to the natural, primitive world from which his race sprang. Some people escape by fishing. Some by hunting. Some by motorboating. Some by camping. Some by sailing. Some by all of these and more.

It is often noted that sailors are a peculiar lot. They are often the foreign car set, the people who like their outdoors raw, the backpackers, the professional people who look to simple pleasures.

Unquestionably, there is a challenge to sailing. This isn't to say it is difficult to learn. It is to say that you never learn it all. Each day is different; each situation new. Sailing teaches keen observation and patience.

The sailor must learn at the outset that the wind is boss. He must accept it, try to undersand it and then take advantage of it. It's a lot like marriage to a skipper.

Inland sailing requires special skills, because the mountains create tricky wind currents. You watch the pattern of the wind on the water. You watch the trees along shore. You watch the little flag atop your mast. You watch, you hope and sometimes you wait.

There is a challenge to it as you absorb a knowledge of wind, weather and water. As you master your craft, you must be careful that your head doesn't swell and tip you

Race at Claytor Lake attracts variety of craft. Below: A canoe turned sailboat on Carvins Cove. Right: Tiny sailfish moors beside large Columbia on Smith Mountain Lake. Sunfish (inset) is one of the fastest selling models today.

Left: FJ's race neck to neck at Smith Mountain Lake. Above: A simply designed catamaran is one of the fastest and most stable sailing rigs. Right: Member of a Lightning race crew checks wind before casting off at Claytor Lake.

over.

Because it is a natural inclination for one sailor to see if he can out sail another, racing rapidly becomes a part of sailing. Racing adds zest to the sport. It requires the utmost attention to every detail. The wind seldom plays favors.

Racing, in turn, derives the necessity for some type of organization so sailors will know when and where to race. Such associations have developed in several inland localities. Western Virginia, for example, sports the Virginia Inland Sailing Association with over 100 members and club facilities at Smith Mountain Reservoir.

A similar sailing club, the Carolina Yacht Club, operates on Kerr Reservoir and annually sponsors a Governor's cup race.

To the novice, sailboats appear to come in about as many sizes, shapes and colors as women's hats. Indeed, there are several hundred recognized sailing classes that vary greatly in size and cost.

A couple popular designs among inland sailors, for example, are the Sailfish and the Lightning.

In 1948 Alex Bryan, a maker of iceboats and surfboards in Waterbury, Connecticut, experimented by attaching a fin and rudder to one of his surfboards, then mounted an old canoe sail to the contraption and sailed away. That was the beginning of the Sailfish, a quick, colorful little craft that now brightens Virginia's waters and numbers nationally in the 50,000s.

Sailfish aren't expensive. They can be stored in the cellar and hauled around atop a car. You can't sink one. You sit atop them like you would a surfboard, and sailing them is a wet and hilarious pastime. They can give a family as much fun as a boat many times their size.

The Lightning is a bigger boat, suitable for family day sailing, with half a dozen persons, and class racing with a crew of three. With a little imagination you can use one for limited overnight cruising. This boat is a 19-footer with a 30-foot mast and 177 square feet of sail.

Ask a sailor how much a sailboat costs and he will likely say, "Oh anywhere from $200 to $6,000. And he's right. Costs vary widely and depend on many things. Virginia sailors pay from about $200.00 for a do-it-yourself Sailfish kit to $3,000.00 for a fiberglass Lightning with racing gear.

Everything considered, sailboating is cheaper than motorboating. The initial cost of equipment is less, and operating expense is nil since the wind doesn't cost you anything. Also, sailboats depreciate very little. They will last a lifetime and can be sold for a good price many years after purchase date.

Trouble is, though, once you buy one, it's not likely you'll ever want to sell it.

PARADE OF THE POLYPORES

By MARIE B. MELLINGER
Hardeeville, South Carolina

ALL through the seasons, the polypore fungi put on an interesting show in every woodland. They are especially noticeable in winter when the deciduous trees are barren of leaves. The visible part of every Polyporus is usually a bracket, called a "conk," protruding alone or in colonies on dead or decaying wood. On the underside of every bracket are hundreds of tiny openings, called pores, giving this fungus their name Polyporus, literally "many pores."

There are some species of Polyporus that have a typical mushroom shape, and still others have goblet shape, but all have an association with wood. Actually the visible conk, or variously shaped fruiting body, is but a small part of the Polyporus, for its thread-like mycelium will stretch for many feet within its wood host.

The fruiting portion of a Polyporus can send out some three hundred and fifty thousand microscopic spores. These enter trees or other wood through wounds or cuts, where lovers have carved their initials too far into the bark, or where surveyors or timber cruisers have marked trees for boundary lines. Deer and bear rub against the bark and cause openings for fungus spores. The woodpeckers assist in spreading the spores, and bark beetles and wood-boring creatures also spread spores from place to place. Most polypores grow on dead or partially decaying wood. Sometimes they appear to be growing on a living tree, and are usually then a sign that the heartwood of the tree has already started to decay. Some few species grow on living trees and then the tree is usually doomed. On dead and decaying wood the polypores help in the regeneration of the forest by turning the wood back into a powdery form that will become part of the topsoil, or humus, of the forest.

Polyporus albidus on the under side of a decaying log.

A Polyporus bracket may be the home of the horned beetle, Bolitotherus. The brackets may also be host to green algae or lichens. The brackets may glow with foxfire, or phosphorescence. Brackets have always provided torchwood, or "touchwood," also called "amadou," the dry, spongy

Visible portions of polypore fungi come in many forms and shapes. They have one thing in common—all are associated with wood.

interior substance used for starting fires. The brackets that glowed with the phosphorescence were once believed to be inhabited by spirits. Touching these to propitiate the spirits may have been the way the saying "to touch wood" for good luck originated. Besides providing the tinder for fires the brackets were used for razor straps, corks, chest protectors, dyes, and snuff. They were also smoked as an anesthetic for bee keepers.

In olden days they were used medicinally as a purge. Lately a promising antibiotic called "biformin" has been found in Polyporus. It is believed that this may be helpful in treating tuberculosis.

Some species of Polyporus add a ring of growth for each season, and some reach a fantastic age and size. There are supposedly some six hundred species in North America, and there are probably many still unnamed or unclassified.

One of the most common is *Polyporus versicolor*, with hundreds of ruffled brackets of various shades and colors. Even blue, a rare color in fungi, is found in this bracket's concentric circles. Sometimes this fungus is known as the "turkey-tail," because it is marked with the colors and patterns found in a turkey's tail feathers. Brackets may be miniature, or reach a size of several inches, but are always

Ranks of Polyporus conks on a tree trunk.

numerous on their host stump or tree trunk. They often appear in large clusters on old stumps, or in layers on trees recently debarked by forest fires.

Some of the Polypores are known by unusual names, such as the "dryad's-saddle." *Polyporus squamosus*, found on decaying ash trees. Another oddity is the "hen-of-the-woods," *Polyporus schweintzii*, with clusters of ruffled brown layers, looking like an old hen surrounded by a bevy of small chicks. This grows at the base of old conifer stumps, and sometimes travels up old tree trunks.

Some species of Polyporus will grow on a wide variety of trees, but others are more specific and are found only on a certain species. For example, *Polyporus roseus*, is found only on evergreens, and *Polyporus rimosus* on the black locust, Robinia. *Polyporus betulinus* is the birch polypore, a smooth, corky, gray-brown, or rarely creamy-white conk growing horizontally from birch trunks. When young these brackets are eaten by deer.

Polyporus buckleyi is determined by the glistening drops of water on its tube surface. Another weeping Polypore is *P. albidus*, with a hoof-shaped, almost flat bracket found on the under side of conifer logs. While actively growing the pores weep, but later they dry and become hard and brittle. *Polyporus applanatus*, on the other hand, has brackets so soft and white and velvety in texture that they are used for drawing boards. They grow to be two feet across, mostly on oak, but rarely on other deciduous trees. *Polyporus radiatus* has a tawny conk with silky, glistening pores, growing in overlapping layers on dead or weakened alder wood.

Polyporus brumalis is a dark, shiny, brown-purple fungus apparently growing on soil, but actually on partially submerged wood. *Polyporus perennis*, the goblet lichen, also looks like it is growing from the ground, but if you dig beneath it you will find partially decayed wood. This lichen looks like lacy-edged golden-brown goblets set one within the other. This is a late fall polypore and someone has suggested a Thanksgiving toast might be given in this pretty woodland goblet. It is often used in dry arrangements.

Most polypores are too tough and leathery to be edible, but *Polyporus sulphureus*, the sulphur mushroom, has been compared in taste to breast of chicken. It is used when very young and tender and free from insect depredations. The soft, brilliantly yellow or orange, or creamy color, fluted brackets are found on a wide assortment of trees, including the chestnut, locust, maple, alder, walnut, pine, hemlock, spruce, and apple. Its favored host tree is the oak, however, and here it sometimes reaches gigantic size. As it becomes older it yields a yellow dye and also shines with enough phosphorescence to take its own picture.

Among the prettiest of all Polypores is the wood-ruffle, *Polyporus frondosus*, found at the base of oak trees. This grows into a large cluster of delicate pale gray ruffles, edged with a darker color. This is also said to be edible when young and tender. Some mycologists say the ruffles have the "odor of mice."

Polyporus brackets can be seen through all the seasons, but many of them seem to take on brighter hues and colors in the spring of the year. Some of them put on new ruffles after the warm midsummer rains. They are seemingly unaffected by extremes of cold or warmth. So the parade of the Polyporus passes through the forest, interesting and unusual at any time of year.

Polyporus betulinus, a species always associated with birch trees.

Bird Watchers' Dividend

By JOYCE FITCHETT RUSSELL
Kilmarnock

HOW many Virginians are acquainted with flying squirrels? Anyone living in a wooded area and feeding birds has the potential for attracting these tiny, nocturnal rodents.

A cousin of the familiar gray squirrel, this fellow is barely larger than a mouse, with a square body and flat, beaver-like tail. His back is a glossy dark brown and his stomach snowy white. The layer of skin extending from his front feet to his back legs has a ruffled edge and provides his means of "flying" or gliding. He has whiskers as long as a cat's and large eyes, the latter doubtlessly evolved because of his nighttime environment.

Although I had heard of flying squirrels, I thought the name a misnomer for the gray squirrel frequently seen leaping from tree to tree. Insight came the first winter we fed our birds. My son had nailed a jar top to the oak tree about fifteen feet from our back door, and we kept this filled with peanut butter.

One night as he fed the dog he heard the top rattling and burst into the house with the news, "We've got a flying squirrel!"

I grabbed a sweater and rushed out. There silhouetted in the dim light was the image of a rat. I screamed and ran back into the house.

Patiently my son collected his nature books, located the articles on the *glaucomys volans*, "flying in the dark," and laid them out for me to study. Another trip out convinced me he was right.

Afterward, we refilled the top at sunset so that our visitor would have plenty to eat. Occasionally when we were late, we would find him already in the sunflower feeder closeby, so that we knew he liked all our bird feed.

And so squirrel-watching became a favorite pastime, and sometimes we invited friends and neighbors to join us, watch them glide in, drop on an earlier arrival already feeding, and chase each other up and down the trunk. We have seen as many as four at a time, but we know there are many more because at dusk on a summer day the tops of the trees echo with their high-pitched barking.

Whether our interest attracted the cat or he had already been aware of the squirrels, we never knew, but soon it was necessary to check the backyard several times each night to chase away the feline enemy. Eventually we encircled the tree with sheet metal to discourage Old Tom. Instead, to our horror, he jumped over it and caught one of our new pets. Surprised at his success, he released his victim, and we stood paralyzed as we saw the squirrel unable to reach safety because of our shield. Needless to say, we removed the metal and raised the jar top so that we could barely reach it from the ladder. The cat problem was solved, although he still can be found sitting and watching.

When spring came, we hired an arborist and his crew to trim our trees, cautioning them that any habitat of our *volans* was to be left intact. The men started their saw, hooked on their belts and climbed the first tree. As the saw touched it, a squirrel flew out and we yelled, "Stop!" Down they came. This action was repeated at the next tree, and the men exchanged glances with a barely perceptible head shake. Warning that these trees may die from within did not change our minds. Since then, a large poplar has died, but, termites notwithstanding, it should provide nesting sites aplenty.

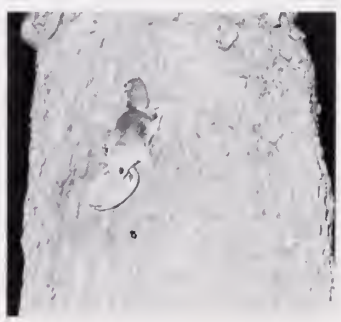
One still night soon after the arborists' aborted efforts, we heard a rustling on a pile of leaves not yet burned and surmised a nest was being built. We had our reward.

The next fall our son sat doing homework in the library when he heard movement in the chimney. He was certain a squirrel had fallen down. We opened the damper and one fell into the fireplace. Lightning-fast, he raced and leaped and climbed and glided—and hid. With my husband's help we would locate him behind the desk or under the sofa arm or behind the door or drape, only to have him disappear before our eyes. Once he climbed the smooth rung of the Boston rocker, and we marveled at the tenacity of his sharp toenails. Finally, my husband cornered him in the adjoining bathroom, dropped a cardboard box over him and deftly slid a magazine under it to hold him in. We took him outdoors, removed the top—and he climbed my son's leg! In a second, though, he had found the familiar tree and was gone.

Again this past fall, we had the same thing happen. I was reading with the cat asleep on my lap when a light "thump" sounded at the fireplace. The cat was beside the chimney before I realized it must be another squirrel. Out went the cat, while we opened the damper and waited. We raised the window, turned off the lights and left the room. Still no squirrel. Bedtime came. My son volunteered to get in the fireplace and probe around the damper. Just as he was covered with soot, I glanced up at the top of the window drapes. There silently watching us were two tremendous brown eyes. We grabbed the box and the chase was on, with my husband soon the hero again. We wanted to study our visitor but our son insisted the squirrels sometimes drop dead from fear; therefore we quickly released him.

We have wondered why they have never come down our other chimney. Perhaps the television aerial warns them off; maybe the furnace flue is too hot. Since they have come only in cool weather, we theorize they must be looking for shelter, climb curiously in and quickly lose their footing on the smooth surface. My son contends they regularly use our roof as a playground—perhaps it is safer than the yard.

We have seen advertisements of flying squirrels for sale as pets. In fact, we have a friend who as a boy captured one from its nest and raised it with much pleasure, eventually releasing it. Still, we recognize the constant territorial struggle and the hierarchal rank of individuals among squirrels, and we have decided we prefer our Nature natural.



FINEST FLY

The muddler minnow.

By DAVID MYERS
Lignum

A FRIEND once asked me, "If you could have only one fly, what would that one be?"

My answer was not long in coming: "I would choose the muddler minnow."

Over the past five years the muddler has proved itself to be by far the best fly I have ever tried for all kinds of fish. It makes no difference whether it is fished wet, dry, or as a streamer; you can expect it to provide you with plenty of action almost anytime.

The muddler minnow originated in Canada and has now spread throughout the United States. There are three variations of this great fly. They are the white muddler, the yellow muddler, and the brown muddler or original muddler. Although all three are excellent, I prefer the brown muddler, because it seems to draw the most strikes for me.

No one seems to agree on exactly what the muddler is supposed to represent. Many claim that it looks like a grasshopper, and when it is fished dry, it does bear a great similarity. I think it best resembles a small minnow, especially when it is fished wet or as a streamer. No matter what it really looks like or how it is fished, the fish still hit it just as viciously and consistently.

All the major national outdoor magazines have featured an article about the muddler minnow at one time or another, and it was after reading such an article that I decided to give it a try. Any fly as great as the author of the article claimed it to be had to be worth a try, and I wanted to find out for myself.

Soon after I bought my first muddler, I decided to give it a test. I was fishing for bass at my favorite pond, but they were not cooperating, and I had caught only one small one on a popping bug.

Tying my muddler to a 2X tapered leader, I made a short cast close to some weeds where I had just finished fishing my popper unsuccessfully. Giving it a few twitches was all that was needed. The water exploded, and I was fast to a two-pound largemouth. Before the afternoon was over I had landed several other fine bass. Since then my fly box has never been without a collection of muddlers in a variety of sizes.

I have found the size six or eight muddler to be best for largemouth bass in ponds. These sizes are also deadly for smallmouth bass in streams. For sunfish, especially bluegills, I prefer the size ten. When fishing for sunfish, I usually fish the muddler as a wet fly and seldom fail to score. Although I have never tried the muddler on trout, my friends who have say it is deadly.

Although the muddler minnow is good all season, I believe it reaches its peak in the fall. At this time of year I usually fish it as a streamer two or three feet below the surface, and it will almost always produce.

During midsummer I like to use muddler as a dry fly in ponds and lakes for largemouth bass during hot spells. I generally cast it close to shore or other cover, give it a few twitches, and if there is a bass nearby he will come charging after it. Even though bass are often sluggish at these times they can seldom resist this technique.

No matter how you fish this great fly you can hardly go wrong. It has proved itself time after time. In my opinion, the muddler minnow is the greatest fly ever!

YEAR OF THE BEARS

By JOHN M. AMOS
Associate Extension Entomologist
Virginia Tech

THE winter of 1966-67 will be remembered by beekeepers as the winter the bears raided the bee yards.

Apparently, the absence of berries, acorns, and other food caused the bears to come down from the mountains. They rambled boldly into the bee yards, even though the homes of the owners were within sight.

The bears are extremely destructive. They break open the hives, eat the honey, bees and brood, then throw the hives and combs on the ground, breaking them. What the bears don't eat is left to perish in the cold. Bees can't winter in Virginia without protection and food.

Once a bear visits a bee yard and gets a taste of honey he's just like a bee visiting a sweet flower. He keeps coming back.

A bee colony may be worth $35 or $40 to a beekeeper, depending on the condition of the equipment.

George V. Grites of Stephens City suffered the most damage last winter. Forty-five entire colonies owned by him near Chester Gap in Rappahannock County were destroyed. He also lost seven hives which he had placed near Boyce in Clarke County.

Bears also destroyed four colonies near the Peaks of Otter. The colonies were owned by W. T. Lindsey of Bedford. In the same area—just off the Skyline Drive in Bedford County—three colonies owned by Webb Richardson of Blacksburg were destroyed by bears.

Two colonies owned by George W. Owens, Route 2, Berryville, were destroyed near his home in the mountains.

"Bears got in my bee hives three times—in the spring of 1965, and in the spring and fall of 1966," says J. T. Henley, Jr., of Route 2, Crozet. "The bear that came in 1965 destroyed 12 hives before I was able to drive him off with small shot. I think he was the same bear who came back in 1966—a 350-pound male. I killed him then after he'd destroyed three hives."

Adapted from an article in the V.P.I. *Extension Service News*, Blacksburg, April, 1967.

Quantico

Through the authority of Public Laws 85-337 and 86-797 approved in February 1958 and September 1960, a "Cooperative Management Plan for the Conservation and Development of Fish and Wildlife Resources at Marine Corps Schools" was formulated and approved by the Marine Corps, the Department of the Interior and the Commonwealth of Virginia February 26, 1963. Under this plan the Bureau of Sport Fisheries and Wildlife, Department of the Interior, furnishes technical assistance and professional advice on fish management while the Commission of Game and Inland Fisheries of the Commonwealth of Virginia furnishes technical assistance and professional advice and some planting materials for game management work. Following the forming of the Cooperative Plan the Marine Corps Schools Game Management program became more organized and long-range plans were implemented. In 1965 the Marine Corps Schools Conservation Committee was established to insure closer cooperation between all land use activities to promote maximum multi-purpose utilization. The training mission requirements of the base may sometimes override conservation planning, but the conservation committee has been able to coordinate conservation efforts with training requirements to the advantage of all concerned.

One prime concern in improving game habitat was the need to retard growth of undesirable species and reopen many of the grown-up areas. Controlled burning was utilized where practical. In addition it was used as a prevention measure against wild fires set by live firing exercises, thereby serving a two-fold purpose. Instead of small game food patches, long rambling strips of feed are planted. Dove fields of various foods were planted in a

U.S.M.C. photo by Kloczkowski

A fine trout that did not get away, hauled in by a happy youngster from Quantico's trout stream.

An aerial view showing typical terrain of Quantico reservation. A wildlife food planting strip runs from lower left toward center of photo.

U. S. Marine Corps photo

continuing dove field experiment. Brush areas unsuited to burning were cleared by use of a rolling chopper or bush and bog disk.

In 1966 game management practices under the direction of the Marine Corps Schools Game Warden were aimed at influencing or improving the habitat on about 10 percent of the land area. Through use of extensive plowing, planting, controlled burning, mowing and timber cutting this goal was accomplished. Stream and impoundment improvements increased the fishing potential, while manipulation of water levels and planting of beaver ponds helped duck hunting.

Before hunting on the base all hunters must attend a hunter safety short course. Conservation education is taught in the post dependents schools. The Post Rod and Gun Club, with a membership of about 1200 members, sponsors a continuing program of conservation education for its members. Hunting safety is stressed and is expected of all who hunt on the base.

A check in-check out system for hunters and fishermen makes possible control of the numbers of sportsmen utilizing the area. To promote safety in hunting the base is divided into hunting areas with well defined boundaries of roads, fire trails or streams. Each area is limited to a certain number of hunters per day. Hunters are assigned to an area and must hunt in that area only. Due to the training mission of the Schools, all or parts of the base may be closed to hunting on a given day. A maximum of about 700 hunters could hunt at one time if all areas were open. However, this seldom happens for training is being conducted at all times.

With all hunters required to check in and out at a check station a record of hunter days, hours hunted and game killed is recorded. For the last five years Quantico has furnished 8000-9000 hunter days of recreation per year. Hours per hunter day average about five. Quantico is a busy base with an active population of approximately 20,000 service personnel, their dependents and civilian employees. Hunting is restricted to service personnel, their families and guests, and a limited number of civilians by written permit. However, since the advent of the cooperative agreements about 1 out of 10 hunters have been civilians, hunting as guests of marines or by written permit.

Hunting seasons have conformed generally with state regulations for the counties of location except the deer season. Due to a very rapid buildup of the deer population on the base a more liberal season was granted by the state. A two-deer, either-sex season made possible harvests that increased to 721 in 1963-64, with a kill of over 450 per year for the years 1960 through 1965-66. Because of a decline in the kill for the past two years, it was decided to limit the kill by changing to a one-bag limit, either sex the first day. This change, as expected, reduced the harvest by more than half to 190. Close check is kept on the deer harvested and the harvest is used as a tool to increase or decrease the herd as deemed necessary.

Harvest of most species over the years that records have been kept has generally increased. There have been wide fluctuations but all native species continue to be plentiful.

With the continued interest of the Marine Corps in conservation and management of a natural resource, and with the cooperation of state and federal agencies to furnish technical assistance, good hunting can continue on an outstanding military training base.

The payoff: an abundant surplus of game to be harvested each year, providing thousands of man-days of wholesome outdoor recreation.

U.S.M.C. photo by Crawford

Seasons in the Dismal (Continued from page 5)

Rain and melting snows renew the waters. Fish that have died from draining ash can be restocked. But, from paving, subdivisions, shopping centers, industrial parks, racetracks and other commercial development, there can be no green comeback for the ecological entity of the Great Dismal.

Already "progress" has encroached upon and scarred parts of the swamp, but nothing has yet been done that cannot be offset or undone. A few years of leaving-alone in some places would suffice.

So-called "civilization" has long girdled this remarkable natural area with roads. East of Suffolk, much of Route 460 is hardly more than the proverbial stone's throw from the edges of the swamp. From the southwestern edges of Suffolk stretches the old "Desert Road to Carolina" or "Dismal Road" through a rural countryside that for the moment is still in harmony with the neighboring swamp. From Deep Creek, U. S. 17—the Ocean Highway—goes straight through the eastern edge of the swamp, along the Dismal Swamp Canal. Below Deep Creek, much of this land is still in small farms and woodlands, except for a few gasoline stations, restaurants and general stores. Along the Canal are some of the prettiest picnic sites in the country, seven of them in Virginia and others in North Carolina.

However, I began to see what was happening when I went into the Deep Creek entrance to the Dismal Swamp. Along Old Mill Road and on Martin Johnson Road, almost to the old ditch, there were many new houses. When I turned into the private road along the ditch, I was relieved to find myself back in the woods—but it wasn't for long. Soon I saw hundreds of cleared flat acres, with green rows and rows of corn, instead of familiar woodlands to my left. Friends in Portsmouth told me later the acreage had been bought by a man named Lewis and was being worked by Wallace Cohoon. The corn last year, they said, had been 14 feet tall, and several bears in the cornfield had been shot from the road by hunters.

Fire in the Swamp! This is an aerial photograph of one of the more devastating fires, which occurred in 1930 after a cutting operation. Fires are harder to control in Dismal Swamp than elsewhere, because

After awhile the woods closed in again and finally I came to the cabin where Juniper Road crosses the Portsmouth Ditch and there was the old swamper, Harvey Vick, with a blue wheelbarrow, working on the flower beds he had planted on the banks around the pond. In back of the cabin he had a flourishing vegetable garden.

Since it was beginning to rain, he invited me in. From the new slick ranch houses not far back along the road, it was a transport in time to go into the little house, with its powder horn and heavy iron bear trap hanging by the

A typical Dismal Swamp lumbering operation. In this one on Jericho Ditch, the wood is mostly white cedar.

Va. State Library photo by W. A. Christian, Jr.

Va. Div. of Forestry photo

of the difficulty of getting men and equipment to them and because of the deep peat deposits which continue to smolder long after the above-ground blaze is extinguished.

door. One of the dogs was dozing behind the old Franklin stove which was giving off the warmth of a dying wood fire on this unseasonally cold wet day. There were several kerosene lamps on the shelves and a stuffed bobcat. (Bobcats seem to be thriving in recent years, perhaps at the expense of some of the other birds and mammals.)

Over the table was a mounted bear head that had won a Virginia Peninsula Sportsmen's Association State Championship third place for Harry C. Biddle in 1946.

The old swamper spoke a little of changes. The geese and the ducks were gone. So were the goats and turkeys we had seen on our last trip. "The cats probably got them." Also the pond was "full of turtles—snappers—and they might have picked off the ducks." On our last visit we had been just in time to go out with R. C. Biddle and Wallace Williams on a trap line which led to a snarling, tense, yellow-eyed wildcat that was maneuvered only with great strength and finesse into a large cage. That was undoubtedly one of the large "cats" that had been picking off the herd of goats across the bridge from the cabin.

But Mr. Vick would rather sing than talk, so I asked him to sing me his ballad about this cabin. "Every word you heard me utter," he said when he had finished, "I haven't got a single one wrote on a piece of paper."

"You have now," I told him, and read back the words to make sure I had them correct. He wanted me to be sure to note that he had changed the name of the "Portsmouth Ditch" to the "Juniper Stream" for the sake of the poetry:

ON THE BANKS OF THE JUNIPER STREAM

There's a little brown shack in the heart of Dismal Swamp
On the bank of the Juniper Stream,
Where the bobcat prowl and the black bear growl
On the bank of the Juniper Stream.
I'd go round the road to the little green barn
And feed the ducks and geese.
And I'd take my hoe, to the field I'd go,
And I'd work till the sun went down.

Then I'd go back to the little brown shack
And listen to the waterfall,
Where the pines grow tall and the whippoorwills call
And the hootin' owls squall
On the bank of the Juniper Stream.
If you want to see a sight in the middle of the night,
Come to the Juniper Stream.
It's a beautiful sight in the bright moonlight
On the bank of the Juniper Stream.

Now that's a great life for an old bachelor
On the bank of the Juniper Stream.
When the snowflakes fall, the wind grows cold,
The frost is in the air and the geese fly south
From the banks of the Juniper Stream.

Mr. Vick also sang railroading songs—he worked in the Seaboard Yards for 50 years—and prohibition songs, of which one was a parody called "You're My Moonshine."

From the cabin on the Juniper Stream it seemed more like a century than five or six miles to the Civic Center of Chesapeake, the new city, incorporated in 1963, which, with 372 square miles, is the third largest city in area in the United States. Almost surely is it the largest to have an open season on bear and deer!—for part of the swamp is in this city. The rest is in Nansemond County.

Because of the spillover from overcrowded urban areas of Norfolk, Portsmouth and what used to be South Norfolk, the future of Great Dismal's woods-water-wildlife survival is being challenged. With drag-line rigs, back hoes and tractors, the eons of its creation, which is still going on, could be stopped in a wink of time.

Harvey Vick.

Edited by HARRY GILLAM

The Largest

This 9 pound 14 ounce rainbow from a Virginia Trout Company pond near Monterey sets a new Virginia record. The lucky angler was Police Sgt. D. L. Talbott of Philippi who landed the 27 inch lunker on spinning tackle.

Commission Information Publications Revised

A number of Game Commission informational folders, including the 1967-68 Summary of Virginia Game Laws, have been revised and reprinted and are now available free from Hunting and Fishing License Agents across the state. The new 24 page hunt law folder is similar to last year's edition including information on seasons and bag limits, hunting regulations, regulations on National and State Forests and Game Commission lands, gun restrictions, license requirements and fees, and trapping regulations. Fourteen pages of maps aid hunters in distinguishing the areas covered by the various season and bag limit combinations for each species.

Also recently revised is the Virginia Public Campsites folder listing 135 state, federal and private campground facilities. All areas are keyed to a gridded general location map as an aid to persons seeking accommodations in a specific area. In addition to a brief description of the location, the folder includes information on the various facilities for campers and the charges, if any. These free folders are available from Game Commission license agents and businesses featuring outdoor recreation equipment.

The latest edition of Public Fishing Waters of Virginia lists 16 Commission owned lakes and 120 public and private lakes and reservoirs open to public fishing. The species of fish present in each are listed along with details on the availability of boats for rent. Also included in the county by county tabulation are over 200 stocked trout streams and information on the state's major rivers offering warmwater fishing.

Some 234 commercial marinas, docks and marine railways are listed in the Commission's newest folders on this subject. Locations, telephone numbers and a tabular summary of facilities are included. A companion folder, Virginia Public Boat Landings, lists 220 public landings, including some 65 owned by the Commission of Game and Inland Fisheries, with the number or name of the road leading to the ramp. Pick up your copies of these and other informational folders when you buy your new hunting or fishing license.

Handgun Tax Suggested for Firearms Training

Rep. John D. Dingell has introduced a bill, H. R. 7681, that would take the current 10 percent excise tax on pistols and revolvers out of general revenue and put half of the proceeds in the Pittman-Robertson Wildlife Restoration Fund. The other half would be prorated to the states for a new program to provide target ranges and promote firearms safety training.

Since 1937 the excise tax on rifles, shotguns, shells and cartridges has been deposited in the Pittman-Robertson Fund and allocated to the states for wildlife research and the purchase of hunting lands. The tax on handguns, which in 1966 amounted to $21,406,243, goes into general revenue. Not only would this put some handgun money into sorely needed firearms safety education, it would channel some of this money into wildlife management work to benefit the growing number of handgun owners who use their weapons for hunting.

Southwest Virginia Brown

This handsome 4 pound 10 ounce brown trout was caught by T. O. Miller of Chilhowie while fishing in the South Fork of the Holston River.

New Fisheries Biologist

Norville S. Prosser, a recent graduate of Colorado State University, has been employed as District Fisheries Biologist for East-Central Virginia. Prosser will fill the position formerly occupied by Ray V. Corning who was promoted to Supervising Biologist.

Prosser worked on various fisheries projects as an undergraduate and while working on his M.S. degree in Fisheries Management. He and his wife will reside in Fredericksburg.

Edited by ANN PILCHER

Tidewater Youth Hold Conservation Conference

Inspired and guided by Debbie White, Granby High School senior who last year represented the Virginia Girl Scouts at the National Youth Conference on Natural Beauty and Conservation in Washington, D. C., six Tidewater youth groups—Girl Scouts, Explorer Scouts, Tidewater Girls Club, Chesapeake 4-H Club, Boys Club and Hi Y Clubs—organized the Tidewater Youth for Conservation Conference held April 29 at Northside Junior High School in Norfolk.

Main speaker was Mr. Charles Hotchkiss, nationally known Audubon lecturer, who narrated the film "Tidewater Trails," showing wildlife in the Williamsburg area. Another film viewed by conference participants was "Conservation and Balance in Nature," which deals with a critical question of our time—what is man doing to his environment?

Adults informed in the fields of air pollution, water pollution, waterfront, anti-litter, roadside control, parks and open spaces, and conservation education led small group discussions which placed emphasis on action projects. Mr. Henry Moore of the Norfolk Chamber of Commerce described a highly successful cleanup project in Norfolk, whereby the Chamber supplied funds for rakes and clippers which Maury High School Key Club members used to clean up a badly littered street.

The establishment of a permanent Tidewater Youth for Conservation Council is an outgrowth of the conference.

(Courtesy Mrs. C. Dodson Morrisette, Executive Director, Norfolk SPCA, and Miss Cordelia Ruffin, Assistant, Coordinator's Office, National Youth Conference on Natural Beauty and Conservation)

Air Rifle Competition

The first annual Nelson County Junior Air Rifle Championships were held at Nelson County High School in Lovingston, Virginia, on Saturday, May 8. The meet was sponsored by the Lovingston Ruritan Club, who donated winners' medals and trophies, and served as a conclusion to the shooting and safety instruction which fourth-seventh graders received as part of their physical education curriculum in the schools of Lovingston, Fleetwood, Rockfish Valley and Schuyler. The meet involved use of air rifles at a distance of 15 feet. Each competitor fired five shots from the standing, prone, sitting and kneeling positions. Students had been classified into different classes based on ability shown in the regular physical education class. Winners were as follows: *Class A*—Greg Colley and Patsy Parr; *Class B*—Sammy Mawyer and Paula Colley; *Class C*—Ray Bibb and Stephanie Page.

Air rifle champions pictured in front row (left to right) are Sammy Mawyer, Ray Bibb and Stephanie Page. Back row: Jim Moyer, who conducted the meet, Patsy Parr, Paula Colley and Mr. L. P. Colley, president of the Lovingston Ruritan Club, who awarded medals to first place winners. (Class A winner Greg Colley is not pictured.)

—Courtesy *Mr. Jim Moyer*, Supervisor Nelson Co. Elem. Physical Education

Hunter Safety Courses Held in Chesapeake-Nansemond Churches

The Tri-County Sportsmen's Association sponsored a four-hour course on safe gun handling held April 20 and 21 at the Grassfield Baptist Church in Chesapeake. Pictured above are 17 young sportsmen who completed the course. Also shown are five of the six Association members who took the instructor's course. Instructing were E. E. Walters, Game Commission Area Patrol Leader, and Wardens E. L. Montgomery and J. L. Ogden. The previous week Messrs. Walters and Ogden with State Game Wardens N. B. Myers and S. B. Snead conducted a 4-hour safety course sponsored by Boy Scout Troop 4 at Magnolia Methodist Church in Nansemond County. Fifteen boys received certificates of completion.

Christiansburg Rodeo

The Annual Children's Fishing Rodeo, given by the Christiansburg-Montgomery County Chapter of the Izaak Walton League of America, was held at the club park May 14, with 207 participants, 12 years old and under.

Eight-year-old Susan Campbell of Radford caught the largest fish, a whopping 25½", 6 pound rainbow trout. The 19" trout caught by Joyce Reysh, of Christiansburg, took first prize in the "up to 6" age group; second prize went to Chris Elliott, of Blacksburg, for a 12 incher. Winner in the "6 to 9" age group was Tony Beeken, of Christiansburg, with a 22" fish. Second prize went to Randy Pennington, of Blacksburg, for a 20" rainbow. Timmie Marshall of Blacksburg won first place in the "9 to 12" group with a fish 23½" long, followed by David Laing, of Floyd, with a 22½" trout.

First prize winners of the 3 groups were awarded trophies; second place winners, a year's subscription to *Virginia Wildlife* magazine.

At least 14 anglers took their day's limit. One steady fisherman, Chris Elliott, has taken his limit for the past three years and still fishes in the "up to 6" age group.

—Courtesy *B. K. King*, Christiansburg

Essay Awards at Hayter's Gap

At a Hayter's Gap Elementary School assembly program on April 25, Mr. James Silliman presented to Mrs. Thelma Henderson, principal, a Certificate of Merit and $10 check for 100% student participation in the 20th Annual Wildlife Essay Contest. Mr. Silliman had accepted these awards in Richmond April 21 on behalf of the school. Mr. Roy Smith, State game warden assigned to Washington County, was present at the assembly and spoke briefly on the beauty and care of our natural resources. Pictured are Richard Morris, 6th grade $15 winner, Warden Smith, Mrs. Henderson, and Mr. Silliman.

Edited by JIM KERRICK

Mid-Season Check-up Insures Boating Fun

Regular care of a boat and motor is the best insurance policy you can buy. The premium is a mid-season check-up to assure a smooth running rig the remainder of the season. Here are a few tips from Bill Smale, chief engineer at Evinrude Motors.

Spark plugs are a vital part of the "go" system. They are easy to check, and, if fouled, inexpensive to replace. Some experienced home mechanics can recognize the sound of a bad plug, but if you're like most of us, your local marine dealer can check plugs quickly.

Boats moored in either salt or fresh water for any length of time will pick up marine growths and scum. Boat owners who complain of a mid-season sluggishness in their rig may find that this scum is the culprit. Pull the boat out of the water and begin to clean it immediately. If this marine life is allowed to dry and harden, your chore will be twice as hard.

A bent or nicked propeller can also be harmful to the general operation and speed of your outboard. Remove the prop and check for nicks. Just to be sure the blades have the proper "pitch," it should be checked by your local marine dealer. If you have to buy a new one, don't throw the damaged one away. Keep it as a spare. It can be mighty handy in an emergency.

Check out your battery for any cracks or corrosion and be sure the cables are in good repair. If you've been regularly using an electric starting motor without a generator, the battery is probably run down. Have it recharged so you're sure of starting power for the rest of the season.

Your owner's manual is always a good guide for maintenance, especially for lubrication. It will point out parts and assemblies which need special attention. Don't forget the lower gear case. If you have to change or add oil, follow factory recommendations.

If the exterior of your engine has been nicked or scratched, a little retouching will give it that brand new look. Most marine dealers carry pressurized cans of outboard marine paint. A good coat of wax will protect the finish.

Accessories and equipment are the final check point. Look for frayed steering cables, exposed wiring and signs of corrosion on the hardware. Make sure life preservers and lines are in good condition.

Although chances are you'll find everything ship-shape, this check-up will insure trouble-free boating the remainder of the season, advises Evinrude.

Reading Water

Reading the water is a lot like reading a good detective story. It's difficult to pick out the villain by skimming the book casually, but if you read thoroughly and know what to look for, the clues always materialize.

A boater is in much the same spot as he reads the water for such villains as submerged rocks, sand bars or floating debris.

However, careful observation will usually turn up one or more clues to aid the boater.

When cruising offshore, study the nature of the coastline for hints. High bluffs rising steeply from the water's edge usually indicate a rocky shore and the presence of submerged boulders. Often there is also considerable current along such bluffs.

Eddies and swirls in the middle of a current or tide should be regarded with suspicion and avoided, since they can signal the location of underwater obstructions.

When looking toward shore from seaward, the height of breakers can be easily underestimated because you are looking down the backs of the waves. Anticipate that the breakers are as much as 50 percent higher and rougher than they appear.

On a river, the deepest water will normally be about midway between the banks on straight stretches, but will swing wide on bends. Sand and silt tend to build up at the mouths of tributaries, creating sand bars and mud banks.

As a general rule water turns lighter in color as it becomes more shallow, particularly when the bottom consists of sand or other material that reflects considerable light.

Quotation

"With more money and more leisure hours, America's families are turning in increasing numbers to boating as the ideal all-family recreation, and there is every reason to expect this trend will continue in the months and years ahead."

—Fred Lefton, Executive Director
Outboard Boating Club of America

A Refund

In addition to the usual 2 cents a gallon federal tax credit on gas purchased for use in pleasure boats, boatmen can now claim 6 cents a gallon on all *lubricating oil* used on their craft. This new savings provision relating to lubricants purchased after *December 31, 1965*, for non-highway purposes was authorized by the Excise Tax Deduction Act of 1965. There are two ways to take advantage of this provision. A refund of tax paid may be requested on a quarterly basis using Internal Revenue Service Form 843. Or a credit for the lubricants used during the year may be taken against personal income tax due on Form 1040 with Form 4136 giving the details regarding their use.

Escalation

An estimated 40,370,000 persons took part in recreational boating during 1966 and spent, on a retail level, more than $2,817,000,000. This is a gain over 1965 of better than a million participants and of more than 200 million dollars in retail sales.

Bird of the Month:

American Bittern

By DR. J. J. MURRAY
Lexington

FOR seven months our choices for this column have all been land birds. Now we come to another water bird, or more strictly speaking a marsh bird, for the bittern rarely resorts to open water but prefers to skulk in swamps and marshes. In a cattail bed it can easily hide.

Male and female American bitterns are alike in markings. The bird is a warm yellow-brown, marked on the back with bars and spots of a darker shade of brown, banded longitudinally below with alternating stripes of pale tan and dull cream. The flight feathers and a stripe on each side of the neck are dark. The bill is dull yellow, the feet light green. Varying much in length, from 25 to 30 inches or more, it has a wingspread that sometimes reaches 50 inches. Resembling the immature form of the black-crowned night heron, it is a warmer brown. At any rate, the black on the side of the throat will always identify it.

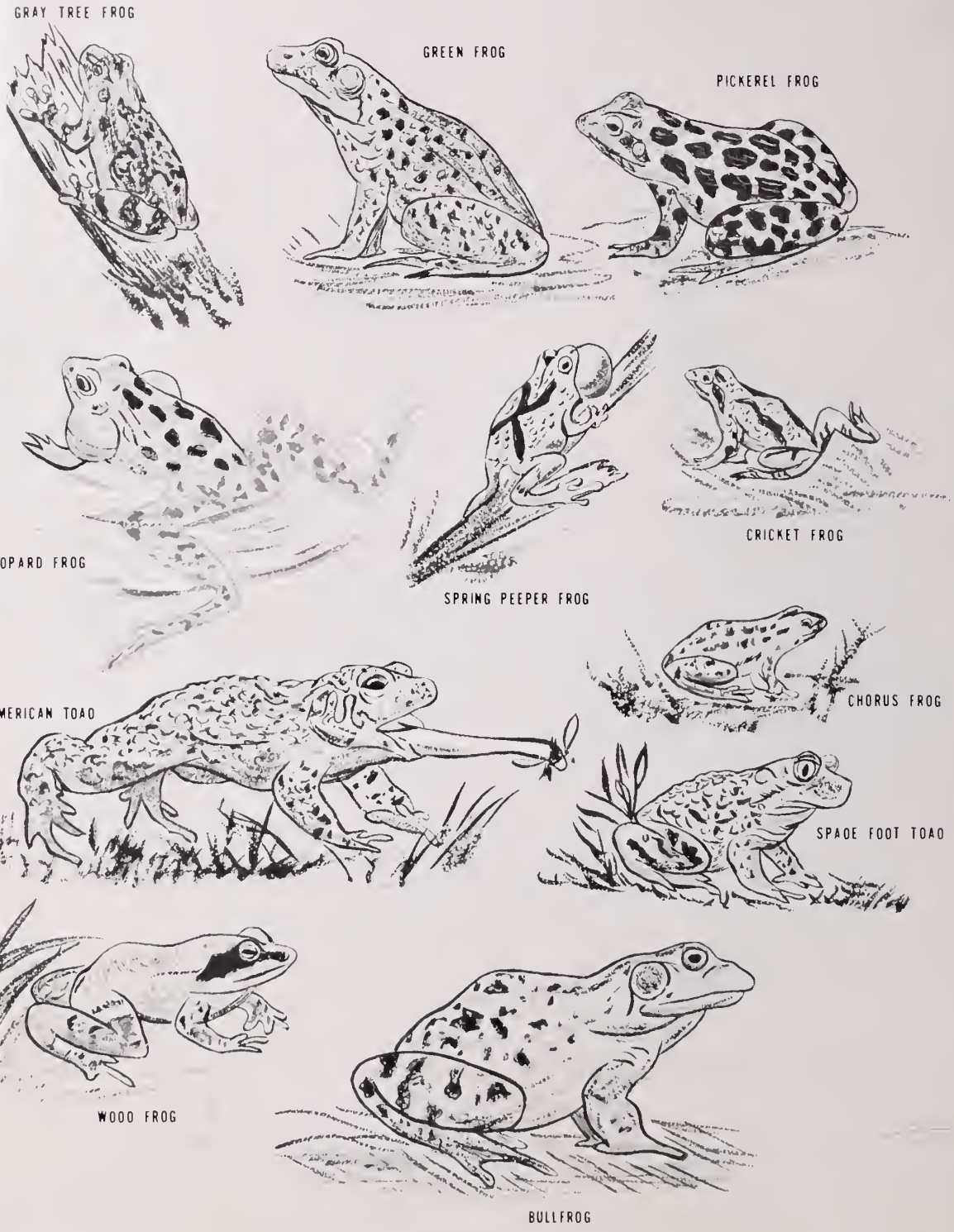
This bird is a heron but belongs to a somewhat aberrant sub-family, of which we have only two species in North America, the other species being the least bittern, a much smaller bird. The American bittern occurs all over the state, although it is not common with us anywhere. We suspect that it may nest occasionally in Rockbridge County, but have no positive evidence. I have found old nests that appear to belong to this species. In Rockbridge we have only 11 spring records, plus one in November and one in December.

A. C. Bent, in his "Life Histories of North American Marsh Birds" (United States National Museum Bulletin 135), states that this bittern "though nowhere especially abundant" is "widely and generally distributed over nearly all of the North American continent." "It is less gregarious," he says, "and more retiring in its habits than the other herons . . . and not so well known, even in localities where it is really common." In winter it withdraws from the northern part of its range, but is found from the Pacific coast and southern states and south through Mexico to Panama.

The nest is usually set in wet and matted marsh grass. Four to 6 brownish eggs, about the size of a hen's egg, are laid. They take four weeks or more to hatch. I have never seen a nest in use, but in that am no more unfortunate than Alexander Wilson or Audubon. They never saw one either.

The bittern eats frogs, small fish, small snakes, grasshoppers, water insects, and even small mammals such as field mice. From this it is apparent that its feeding habits are helpful to human interests.

One of the oddest things about this odd bird is the "pumping" sound that it makes. Peterson describes this sound as a "slow, deep 'oong-ka-choonk—oong-ka-choonk—oong-ka-choonk'." At a distance, when only the *ka* syllable is audible, it sounds, he says, "like a mallet driving a stake into the mud." I have heard the flight note, which is often a croaking "ok-ok-ok-ok."

TOADS AND FROGS

by William D. Rodgers Jr.